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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.

10/783,786

Confirmation No. 7830

Applicant

Kranz et al.

Filed

February 20, 2004

TC/A.U.

1645

Examiner For

Not assigned
HIGH AFFINITY TCR PROTEINS AND METHODS

Docket No.

89-99A

Customer No.:

23713

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

CERTIFICATE OF MAILING

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July 20, 2004 Date

Cathy Nelson

EV 456657615 US Express Mail Tracking Number

INFORMATION DISCLOSURE STATEMENT

Sir:

This application is a divisional of U.S. Application Serial No. 09/731,242, filed December 6, 2000. Copies of PTO Forms 1449 submitted in U.S. Application Serial No. 09/731,242 are enclosed. In accordance with 37 C.F.R. 1.98(d), copies of references cited in that application are not submitted, but will be provided upon request. Pursuant to the Waiver published in the Official Gazette on August 5, 2003, because this application was filed after June 30, 2003, copies of cited U.S. patents are not included, but will be provided upon request.

The Examiner is respectfully requested to consider the references, copies enclosed, which may qualify as prior art. For the Examiner's convenience, the references are listed on the attached Patent and Trademark Office form PTO-1449.

This information is cited in a spirit of forthrightness and cooperation to enable the applicants to obtain that measure of protection for the invention to which there is entitlement. However, no representation is made that the listed art actually qualifies as prior art under the patent statute and the mere use of PTO-1449 is not an admission that all listed references are prior art. No representation is made that applicants know of the best art.

It is believed that this submission does not require the payment of a fee. If this is not correct, please charge any required fee to deposit account no. 07-1969.

Respectfully submitted,

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Attorney docket No. 89-99A July 20, 2004

Sheet 1 of 2

for form 1449/PTO, based on PTO/SB/08A and 08B INFORMATION DISCLOSURE **ATEMENT BY APPLICANT**

Application Number	10/783,786	
Filing Date	02/20/2004	
First Named Inventor	KRANZ et al.	
Art Unit	1645	
Examiner Name	Not assigned	
Attorney Docket Number	89-99A	

U.S. PATENT DOCUMENTS

Examiner Initial*	Cite No. ¹	Document Number (US-)	Publication Date (MM-DD-YYYY)	Name	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear (or entire document unless noted otherwise)
		6,331,391	12/18/2001	Wittrup et al.	
		6,423,538	07/23/2002	Wittrup et al.	
		6,696,251	02/24/2004	Wittrup et al.	
		6,699,658	03/02/2004	Wittrup et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No. ¹	Foreign Patent Document Number (include WIPO country code)	Publication Date (MM-DD-YYYY)	Name	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear (or entire document unless noted otherwise)	T²
		WO 99/36569	07/22/1999	Wittrup et al.		
		WO 01/48145	07/05/2001	Kranz et al.		
		EP 0673427	09/27/1995	Klis et al.		
		EP 0682710	11/22/1995	Frenken et al.		

NON-PATENT LITERATURE DOCUMENTS

Examiner Initial*	Cite No.1	REFERENCE Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
		E. T. Boder et al., "Yeast surface display system for antibody eingineering," Immunotechnology 2(4):283, 1996	
		J. Foote et al., "Breaking the affinity ceiling for antibodies and T cell receptors," PNAS 97(20):10679-10681, 2000	
		D. N. Garboczi et al., "Structure of the complex between human T-cell receptor, viral peptide and HLA-A2," Nature 384:134-141, 1996	
		M. D. Griffin et al., "Development and applications of surface-linked single chain antibodies against T-cell antigens," <i>J Immunol Methods</i> 248:77-90, 2001	
		H. R. Hoogenboom, "Designing and optimizing library selection strategies for generating high-affinity antibodies," Tibtech 15:62-70, 1997	

Examiner	Date	
Signature	Considered	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Applicant's unique citation designation number (optional).

Applicant is to place a check mark here or "x" if English language Translation is attached.

Substitute for form 1449/PTO, based on PTO/SB/08A and 08B	Application Number	10/783,786
	Filing Date	02/20/04
INFORMATION DISCLOSURE	First Named Inventor	KRANZ et al.
STATEMENT BY APPLICANT	Art Unit	1645
	Examiner Name	Not assigned
	Attorney Docket Number	89-99A

	B. Malissen, "Les liaisons dangereuses," Nature Immunology 2(3):196-198, 2001	
	D. Moosmayer et al., "A single-chain TNF receptor antagonist is an effective inhibitor	
	of TNF mediated cytotoxicity," Therapeutic Immunology 2:31-40, 1995	
		-
	M. G. Rudolph et al., "The specificity of TCR/pMHC interaction," Current Opinion in	1
	Immunology 14:52-65, 2002	-
	M. P. Schreuder et al., "Yeast expressing hepatitis B virus surface antigen	
	determinants on its surface: Implications for a possible oral vaccine," Vaccine 14(5):383-388, 1996	
	E. V. Shusta et al., "Yeast polypeptide fusion surface display levels predict thermal stability and soluble secretion efficiency," J. Mol. Biol. 292:949-960, 1999	
	E. V. Shusta et al., "Increasing the secretory capacity of Saccharomyces cerevisiae for production of single-chain antibody fragments," Nature Biotech. 16:773-777, 1998	
	J. J. VanAntwerp et al., "Fine affinity discrimination by yeast surface display and flow cytometry," Biotechnol. Prog. 16:31-37, 2000	
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Examiner	Date	
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Form PTO 1449		
ATTY DOCKET NO 89-99A	SERIAL NO. 10/783,786	FILING DATE : February 20, 2004
APPLICANT Kranz et al.		GROUP 1645

U.S. PATENT DOCUMENTS

Exmr Initial	Documen Number	t Date (dd-mm-yyyy)	Name	Class	Subclass	Filing Date if Appropriate
	6,300,065	09-10-2001	Kieke, et al.	435	6	

FOREIGN PATENT DOCUMENTS

Document Number	Date	Country	Class	Subclass	Translation Yes/No
WO 99/36569	22-07-1999	PCT			

OTHER PRIOR ART (including Author, Title, Date, Pertinent Pages, etc.)

 IER I RIOR ART [Including Name, 1 me, 2 me, 2
Al-Ramadi BK, et al., (1995)Lack of strict correlation of functional sensitation with the apparent affinity of MHC/peptide complexes for the TCR. J. Immunol. 155: 662-673.
Bellio M, et al., (1994), The Vβ complementarity determining region 1 of a major histocompatibility complex (MHC) class 1-restricted T cell receptor is involved in the recognition of peptide/MHC I and superantigen/MHC complex. J. Exp. Med. 179: 1087-1089.
Bird, RE, et al., (1988), Single-chain antigen-binding proteins. Science. 242: 423-426
Boder, E.T., et al., (2000), Yeast surface display for directed evolution of protein expression, affinity, and stability. <i>Methods Enzymol</i> 328, 430-444.
Brodnicki, TC., (1996), Reactivity and epitope mapping of single-chain T cell receptors with monoclonal antibodies. <i>Mol. Immunol.</i> 33:253-263
Cho, BK, et al., (1995), Characterization of a single-chain antibody to the β-chain of the T cell receptor. J. Biol. Chem. 270: 25819-25826.
Cochran, et al., (2000), A diverse set of oligomeric class II MHC-peptide complexes for probing T-cell receptor interactions. Chemistry & Biology, Vol. 7:683-696.
Corr M, et al., (1994), T cell receptor-MHC class I peptide interactions: affinity, kinetics, and specificity. Science 265: 946-949.
Engel I, et al., (1988), Site-directed mutations in the VDJ junctional region of a T cell receptor β chain cause changes in antigenic peptide recognition. <i>Cell</i> 54: 473-484.
Holler, Phillip D., et al., (2001), CD8- T Cell Transfectants that Express a High Affinity T Cell Receptor Exhibit Enhanced Peptide-dependent Activation. <i>J. Exp. Med.</i> 194: 1043-1052.

EXAMINER

DATE CONSIDERED

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Form PTO 1449		
	SERIAL NO. 10/783,786	FILING DATE February 20, 2004
APPLICANT Kranz et al.		GROUP 1645

Holler, et al., (2002) TCRs with high affinity for foreign pMHC show self-reactivity. Nature Immunology, Published online 9 December 2002; doi:10.1038/ni863
Holler, et al., (2003) Quantitative Analysis of the Contribution of TCR/pepMHC Affinity and CD8 to T Cell Activation, <i>Immunity</i> , 18:255-264.
Holler, et al., (2000) <i>In vitro</i> evolution of a T cell receptor with high affinity for peptide/MHC, <i>PNAS</i> , 97:5387-5392.
Hoogenboom, Hennie R., (1997) Designing and optimizing library selection strategies for generating high-affinity antibodies, <i>Tibtech</i> , 15:62-70.
Kasibhatla S. et al., (1993) Simultaneous involvement of all six predicted antigen binding loops of the T cell receptor in recognition of the MHC/antigenic peptide complex. J. Immunol. 151:3140-51.
Kieke, M.C., et al., (2001), High affinity T cell receptors from yeast display libraries block T cell activation by superantigens. J Mol Biol 307:1305-1315.
Malchiodi EL, (1995), Superantigen binding to a T cell receptor β chain of known three-dimensional structure. <i>J. Exp. Med.</i> 182:1833-1845.
Shusta, E.V., et al., (2000), Directed evolution of a stable scaffold for T-cell receptor engineering. Nat Biotechnol 18:754-759.
Wittrup, K.D., (2000), The single cell as a microplate well. Nat Biotechnol 18:1039-1040.
Yoon, ST., (1994), Both high and low avidity antibodies to the T cell receptor can have agonist or antagonist activity. <i>Immunity</i> 1:563-569.

EXAMINER

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ATTY DOCKET NO. 89-99A	SERIAL NO. 10/783,786	FILING DATE February 20, 200
APPLICANT Kranz et al.		GROUP 1645

Exmr Initial	Document Number	Date (dd-mm-yy)	Name	Class	Subclass	Filing Date if Appropriate

FOREIGN PATENT DOCUMENTS

Document Number	Date (dd-mm-yy)	Country	Class	Subclass	Translation Yes/No
98 39482 A	11-9-98	PCT			
99 36569 A	22-7-99	PCT			

OTHER PRIOR ART (including Author, Title, Date, Pertinent Pages, etc.)

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Form 87 0 1449		
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APPLICANT Kranz et al.		GROUP 1645

U.S. PATENT DOCUMENTS

Exmr Initial		Document Number	Date (dd-mm-yyyy)	Name	Class	Subclass	Filing Date if Appropriate
	1	5,861,156	01/19/1999	George et al.	424	135.1	

FOREIGN PATENT DOCUMENTS

Document Number	Date	Country	Class	Subclass	Translation Yes/No

OTHER PRIOR ART (including Author, Title, Date, Pertinent Pages, etc.)

2	Weidanz, Jon A. et al. (August 1998) "Display of functional αβ single-chain T-cell receptor molecules on the surface of bacteriophage" Journal of Immunological Methods 221:59-76.
3	Shusta, E.V. et al. (1999) "Yeast Polypeptide Fusion Surface Display Levels Predict Thermal Stability and Soluble Secretion Efficiency" Academic Press 292:949-956.
4	Lake, D.F. et al. (January 1999) "Construction and binding analysis of recombinant single-chain TCR derived from tumor-infiltrating lymphocytes and a cytotoxic T lymphocyte clone directed against MAGE-1" International Immunology 11:745-751.
5	Kumar, V. et al. (1997) "Recombinant T Cell Receptor Molecules Can Prevent and Reverse Experimental Autoimmune Encephalomyelitis" <i>The Journal of Immulology</i> 159:5150-5156.

EXAMINER

DATE CONSIDERED

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APPLICANT: Kranz et al.		GROUP: 1645

U.S. PATENT DOCUMENTS

Exmr. Initial	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
	4,946,778	08/07/90	Ladner et al.	435	69.6	
	5,013,650	05/07/91	Carty	435	69.1	
	5,223,409	06/29/93	Ladner et al.	435	69.7	
	5,225,539	07/06/93	Winter			·
	5,258,289	11/02/93	Davis			
	5,258,498	11/02/93	Huston et al.	530	350	
	5,260,203	11/09/93	Ladner et al.	435	172.3	
	5,316,922	05/31/94	Brown			
	5,403,484	04/04/95	Ladner et al.	435	235.1	
	5,411,873	05/02/95	Adams			
	5,427,908	06/27/95	Dower			
	5,482,858	01/09/96	Huston et al.	435	252.33	
	5,510,240	04/23/96	Lam		ļ <u> </u>	
	5,571,698	11/05/96	Ladner			
	5,580,717	01/20/95	Dower			<u> </u>
	5,624,817	04/29/97	Miller et al.	435	69.1	
	5,723,286	03/03/98	Dower et al.	435	5	
	5,723,323	03/03/98	Kauffman et al.	435	172.3	
	5,733,743	03/31/98	Johnson et al.	435	69.1	
	5,763,192	06/09/98	Kauffman et al.	435	7.1	
	5,780,225	07/14/98	Wigler et al.	435	6	
	5,814,476	09/29/98	Kauffman et al.	435	69.1	

Form PTO-1449	
ATTY DOCKET NO.: 89-99A SERIAL NO. 10/783,786	FILING DATE: February 20, 2004
APPLICANT: Kranz et al.	GROUP: 1645

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	5,817,483	10/06/98	Kauffman et al.	435	69.1	
	5,824,514	10/20/98	Kauffman et al.	435	91.1	
	5,837,500	11/17/98	Ladner et al.	435	69.7	
	5,858,657	01/12/99	Winter et al.	435	6	
·	5,866,344	02/02/99	Georgiou	435	7.21	
	5,871,974	02/16/99	Huse	435	69.7	
	5,900,476	05/04/99	Ruggeri et al.	530	380	
	6,027,910	02/22/00	Klis et al.	435	41	
	6,114,147	09/05/00	Frenken et al.	435	69.7	

FOREIGN PATENT DOCUMENTS

Document Number	Date	Country	Class	Subclass	Translation Yes/No
WO94/18330	08/18/94	PCT			
WO94/01567	20.01.94	PCT			
WO98/49286	05.11.98	PCT			
0 436 597 B1	02.04.97	EP	<u> </u>		

OTHER PRIOR ART (including Author, Title, Date, Pertinent Pages, etc.)

Alam et al., (June 1996), "T-cell-receptor Affinity and Thymocyte Positive Selection," Nature 381:616-620
Anand, R. et al. (1992), "Progress in developing methylotrophic yeasts as expression systems." <i>TIBTECH</i> 10:413-417
Bentley, G.A. and Mariuzza, R.A., (1996), "The Structure of the T Cell Antigen Receptor," Annu. Rev. Immunol. 14:563-590
Boder, E.T. and Wittrup, K.D., (1997), "Yeast surface display for screening combinatorial ploypeptide libraries." Nature Biotech. 15(6):553-557

Form PTO-1449		
ATTY DOCKET NO.: 89-99A	SERIAL NO.: 10/783,786	FILING DATE: February 20, 2004
APPLICANT: Kranz et al.		GROUP: 1645

Boder, E.T. and Wittrup, K.D. (1995), "A Yeast Surface Display System for in vitro Affinity Maturation of Antibodies," Protein Interactions, June 1-4, 1995, Beckman Institute. University of Illinois, Urbana, (Abstract Only)
Buckholz, R.G. and Gleeson, M.A.G. (1991), "Yeast Systems for the Commercial Production of Heterologous Proteins," <i>Bio/Technol</i> . 9:1067-1072
Bjorkman, P.J., (Apr 1997), "MHC Restriction in Three Dimensions: A View of T Cell Receptor/Ligand Interactions," Cell 89:167-170
Clackson et al., (Aug 1991), "Making Antibody Fragments Using Phage Display Libraries," Nature 352:624-628
Cregg, J.M. et al. (1993), "Recent Advances in the Expression of Foreign Genes in Pichia pastoris," Bio/Technol. 11:905-910
Faber, K.N. et al. (1995), "Review: Methylotrophic Yeasts as Factories for the Production of Foreign Proteins." Yeast 11:1331-1344
Fremont et al., (1996), "Biophysical Studies of T-cell Receptors and Their Ligands," Curr. Opin. Immunol. 8:93-100
Hawkins, R.E. et al. (1992), "Selection of Phage Antibodies by Binding Affinity Mimicking Affinity Maturation," J. Mol. Biol. 226:889-896
Hawkins, R.E. et al. (1993), "The Contribution of Contact and Non-contact Residues of Antibody in the Affinity of Binding to Antigen," J. Mol. Biol. 234:958- 964
Jung, S. and Plückthun (1997), "Improving in vivo folding and stability of a single chain Fv antibody fragment by loop grafting." Protein Eng. 10(8):959-966
Kieke, M.C. et al. (1997), "Isolation of anti-T cell receptor scFv mutants by yeast surface display." Protein Eng. 10(11):1303-1310
Klis. F.M. (1994). "Review: Cell Wall Assembly in Yeast." Yeast 10:851-869
Knappik, A. and Plückthun, A. (1995), "Engineered turns of a recombinant antibody improve its in vivo folding." Protein Eng. 8(1):81-89
Lipke, P.N. and Kurjan, J., (Mar 1992), "Sexual Agglutination in Budding Yeasts: Structure, Function, and Regulation of Adhesion Glycoproteins," Microbiological Reviews pp. 180-194
Lyons et al., (July 1996), "A TCR Binds to Antagonist Ligands with Lower Affinities and Faster Dissociation Rates Than to Agonists." Immunity 5:53-61
Margulies, D.H., (June 1996). "An Affinity for Learning," Nature 381:558-559

Form PTO-1449		
ATTY DOCKET NO.: 89.–99A	SERIAL NO. 10/783,786	FILING DATE: February 20, 2004
APPLICANT: Kranz et al.		GROUP: 1645

RIGINALLY CITE) IN	09//31,242
		Marx, J. (Jan 1995), "The T Cell Receptor Begins to Reveal Its Many Facets," Science 267:459-460
		Matsui et al., (Dec 1991), "Low Affinity Interaction of Peptide-MHC Complexes with T Cell Receptors," Science 254:1788-1791
		Matsui et al., (Dec 1994), "Kinetics of T-cell Receptor Binding to Peptide/I-E* Complexes: Correlation of the Dissociation Rate with T-cell Responsiveness," Proc. Natl. Acad. Sci. USA 91:12862-12866
		Nieba, L. et al. (1997), "Disrupting the hydrophobic patches at the antibody variable/constant domain interface: improved in vivo folding and physical characterization of an engineered scFv fragment," Protein Eng. 10(4):435-444
		O'Herrin et al., (Oct 1997), "Analysis of the Expression of Peptide-Major Histocompatibility Complexes Using High Affinity Soluble Divalent T Cell Receptors," J. Exp. Med 186:1333-1345
		Reich et al., (June 1997), "Ligand-specific Oligomerization of T-cell Receptor Molecules," Nature 387:617-620
		Ridder, R. et al. (1995), "Generation of Rabbit Monoclonal Antibody Fragments from a Combinatorial Phage Display Library and Their Production in the Yeast Pichia pastoris," Bio/Technol. 13:255-259
		Romanos, M. (1995), "Advances in the use of Pichia pastoris for high-level gene expression," Curr. Opinion in Biotechnol. 6:527-533
		Romanos et al., (1992), "Foreign Gene Expression in Yeast: a Review," Yeast 8:423-488
		Schlueter et al., (1996), "Specificity and Binding Properties of a Single-chain T Cell Receptor." J. Mol. Biol. 256:859-869
		Schreuder et al., (Apr 1996), "Immobilizing Proteins on the Surface of Yeast Cells," TIBTECH 14:115-120
		Schodin et al., (1996), "Binding Properties and Solubility of Single-Chain T Cell Receptors Expressed in E. Coli," Molec. Immunol. 33(9):819-829
		Sudbery, P.E. (1994), "The Non-Saccharomyces Yeasts," Yeast 10:1707-1726
		Syrulev et al., (Dec 1995), "The Law of Mass Action Governs Antigen-stimulated Cytolytic Activity of CD8 ⁺ cytotoxic T Lymphocytes," Proc. Natl. Acad. Sci. USA 92:11990-11992
		Ulrich et al. (Dec 1995), "Expression Studies of Catalytic Antibodies," Proceed. Natl. Acad. Sci. 92:11907-11911

Form PTO-1449		
	SERIAL NO.: 10/783,786	FILING DATE: February 20, 2004
APPLICANT: Kranz et al.		GROUP: 1645

van der Vaart (Sept 1965), "Identification and Characterization of Cell Wall Proteins of Saccharomyces ceevisiae," Thesis, ISBN 90-393-1498-5 pp.1-138
Weber et al., (Apr 1992). "Specific Low-affinity Recognition of Major Histocompatibility Complex Plus Peptide by Soluble T-cell Receptor," Nature 356:793-796

EXAMINER

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U.S. PATENT DOCUMENTS

Exmr. Initial	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
	RE 35,500	05/06/97	Rhodes	424	1.49	
	3,817,837	06/18/74	Rubenstein et al.	195	103.5	
	3,850,752	11/26/74	Schuurs et al.	195	103.5	
	3,927,193	12/16/75	Hansen et al.	424	1	
	3,939,350	02/17/76	Kronick et al.	250	365	
	3,996,345	12/07/76	Ullman et al.	424	12	
	4,275,149	06/23/81	Litman et al.	435	7	
	4,277,437	. 07/07/81	Maggio	422	61	Â.
	4,331,647	05/25/82	Goldenberg	424	1	. *
	4,348,376	09/07/82	Goldenberg	424	1	
	4,361,544	11/30/82	Goldenberg	424	1	
	4,366,241	12/28/82	Tom et al.	435	7	
	4,444,744	04/24/84	Goldenberg	424	1.1	
	4,468,457	08/28/84	Goldenberg et al.	435	69	
	4,640,561	02/03/87	George	339	17	
	4,713,332	12/15/87	Mak	435	70	
	4,831,122	05/16/89	Buchsbaum et al.	530	389	
	4,873,190	10/10/89	Saito et al.	435	172.3	
	4,874,845	10/17/89	Saito et al.	530	395	
	4,923,799	05/08/90	Mak	435	6	
	4,970,296	11/13/90	Saito et al.	530	323	
	5,024,940	06/18/91	Brenner et al.	435	69.1	
	5,059,413	10/22/91	Reardan et al.	424	4.1	
	5.101.827	04/07/92	Goldenberg	128	653.4	

Form PTO-1449		
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APPLICANT Kranz et al.		GROUP 1645

5,185,250	02/09/93	Brenner et al.	435	69.3
5,299,253	03/29/94	Wessels	378	163
5,316,925	05/31/94	Davis et al.	435	91.2
5,340,921	08/23/94	Brenner et al.	530	350
	09/20/94	Georgiou et al.	435	69.7
5,348,867		Schatz	435	69.1
5,498,530	03/12/96			395
 5,580,961	12/03/96	Saito et al.	530	
5,601,822	02/11/97	Brenner et al.	424	144.1
5,614,192	03/25/97	Vandenbark	424	185.1
5,635,363	06/03/97	Altman et al.	435	7.24
5,723,309	03/03/98	Bonneville	435	69.1
5,738,996	04/14/98	Hodges	435	7.1
 5,763,733	06/09/98	Whitlow et al.	530	387.3
5,767,260	06/16/98	Whitlow et al.	536	23.4
5,789,208	08/04/98	Sharon	435	91.41
5,824,483	10/20/98	Houston, Jr., et al.	435	7.i
5,837,477	11/17/98	Germain et al.	435	7.24
5,840,304	11/24/98	Davis et al.	424	192.1
5,866,363	02/02/99	Pieczenik	435	69.1
5,869,620	02/09/99	Whitlow et al.	530	387.3
5,871,907	02/16/99	Winter et al.	435	6
5,882,945	03/16/99	Saito et al.	436	547
5,948,409	09/07/99	Germain et al.	424	193.1
5,969,108	10/19/99	McCafferty et al.	530	387.3
5,977,321	11/02/99	Saito et al.	530	388.75
6,017,732	01/25/00	Jespers, et al.	435	69.6

Form PTO-1449		
ATTY DOCKET NO. 89-99A	SERIAL NO. 10/783,786	FILING DATE February 20, 2004
APPLICANT Kranz et al.		GROUP 1645

FOREIGN PATENT DOCUMENTS

OTHER PRIOR ART (including Author, Title, Date, Pertinent Pages, etc.)

Alam, S.M. et al., (Feb 1999), "Qualitative and Quantitative Differences in T Cell Receptor Binding of Agonist and Antagonist Ligands," Immunity 10:227-237
Alberti, S., (1996), "A high affinity T cell receptor?," Immunol. Cell Biol. 74:292-297
Altschul, S.F. et al., "Gapped BLAST and PSI-BLAST: a new generation of protein database search programs" (Sept. 1997) Nucleic Acids Research 25(17):2278-3402
Baldwin, R.W. and Byers, V.S., (Editors) (1985), Monoclonal Antibodies for Cancer Detection and Therapy, London Academic Press pp. 159-179
Beeson, C. et al., (Aug 1996), "Early Biochemical Signals Arise from Low Affinity TCR-Ligand Reactions at the Cell-Cell Interface," J. Exp. Med. 184:777-782
Bevan, M.J., "In Thymic Selection, Peptide Diversity Gives and Takes Away" (Aug. 1997), Immunity 7:175-178
Boder, E.T. et al., "Directed Evolution of Antibody Fragments with Monovalent Femtomolar Antigen-binding Affinity" (September 2000) Proc. Nat'l. Acad. Sci. USA 97(20):10701-10705
Boder, E.T. and Wittrup, K.D., (Feb. 1998), "Optimal Screening of Surface- Displayed Polypeptide Libraries," Biotech. Progress 14(1):55-62
Boniface, J.J. et al., (Sept 1999), "Thermodynamics of T cell receptor binding to peptide-MHC: Evidence for a general mechanism of molecular scanning" Proc. Natl. Acad. Sci. USA 96:11446-11451

Form PTO-1449		
ATTY DOCKET NO. 89-99A	SERIAL NO. 10/783,786	FILING DATE February 20, 2004
APPLICANT Kranz et al.		GROUP 1645

Buchwalder, A. et al., (1994), "Immunochemical and Molecular Analysis of Antigen Binding to Lipid Anchored and Soluble Forms of an MHC Independent Human α/β T Cell Receptor," Mol. Immunol. 31(11):857-872
Callan, M.F. et al., (1995), "Selection of T cell receptor variable gene-encoded amino acids on the third binding site loop: a factor influencing variable chain selection in a T cell response," Eur. J. Immunol. 25:1529-1534
Cheng, Y.C., "Relationship Between The Inhibition Constant (K ₁) and the Concentration of Inhibitor Which Causes 50 Per Cent Inhibition (I ₅₀) of an Enzymatic Reaction" (1973), Biochem. Pharm. 22;3099-3108
Cho, B.K. et al., "A yeast surface display system for the discovery of ligands that trigger cell activation." (Nov 1988) J. Immunol Methods (Netherlands) 220:179-88
Chung. S. et al., (Dec 1994), "Functional three-domain single-chain T-cell receptors," Proc. Natl. Acad. Sci. USA 91:12654-12658
Clackson, T. et al., (August 1991) "Making antibody fragments using phage display libraries" Nature 352:624-628
Dal Porto, J. et al., (1993), "A soluble divalent class I major histocompatibility complex molecule inhibits alloreactive T cells at nanomolar concentrations" Proc. Natl. Acad. Sci. USA 90:6671-6675
Davis, M.M. and Bjorkman, D.J., (Aug 1988), "T-cell antigen receptor genes and T-cell recognition," Nature 334:395-402
Davis et al., (Annual -1998), "Ligand Recognition by αβ T Cell Receptors," Annu. Rev. Immunol. 16:523-544
Davis, M.M. and Chien, Y., (1993), "Topology and affinity of T-cell receptor mediated recognition of peptide-MHC complexes," Curr. Opin. Immunol. 5:45-49
de Kruif, J. and Logtenberg, T., (Mar 1996), "Leucine Zipper Dimerized Bivalent and Bispecific scFv Antibodies from a Semi-synthetic Antibody Phage Display Library," Amer. Soc. Biochem. Mol. Biol. 271(13):7630-7634
Eisen, H. N. et al., (1996)," Antigen-Specific T-Cell Receptors And Their Reactions With Complexes Formed By Peptides With Major Histocompatibility Complex Proteins" Adv. Protein Chem. 49:1-56
Faber, K.N. et al., (1995), "Review: Methylotrophic Yeasts as Factories for the Production of Foreign Proteins" Yeast 11:1331-1344
Foote, J. and Eisen, H.N., (Sept. 2000) "Breaking the affinity ceiling for antibodies and T cell receptors" PNAS 97(20):10679-10681

Form PTO-1449		
ATTY DOCKET NO. 89-99A	SERIAL NO. 10/783,786	FILING DATE February 20, 2004
APPLICANT Kranz et al.		GROUP 1645

Furukawa, k. et al., "Junctional Amino Acids Determine the Maturation Pathway of an Antibody" (Sept.1999), Immunity 11:329-338
Ganju, R.K. et al., (Dec 1992), "Similarity between fluorescein-specific T-cell receptor and antibody in chemical details of antigen recognition," Proc. Natl. Acad. Sci. USA 89:11552-11556
Garcia, K.C. et al. "An αB T Cell Receptor Structure at 2.5 Åand Its Orientation in the TCR-MHC Complex" (Oct. 1996), Science 274:209-219
Garcia, K.C. et al., "CD8 enhances formation of stable T-cell receptor/MHC class I molecule complexes" (December 1996), Nature 384:577-581
Garcia, K.C. et al., (Dec 1997), "αβ T cell receptor interactions with syngeneic and allogeneic ligands: Affinity measurements and crystallization," Proc. Natl. Acad. Sci. USA 94:13838-13843
Garcia, K.C. et al., "Structural Basis of Plasticity in T Cell Receptor Recognition of a Self Peptide-MHC Antigen" (Feb. 1998) Science 279:1166-1172
Gascoigne, N.R. et al., (May 1987), "Secretion of a chimeric T-cell receptor-immunoglobulin protein," Proc. Natl. Acad. Sci. USA 84:2936-2940
Gellissen, G. et al., (1992) "Progress in developing methylotrophic yeasts as expression systems" Tibtech 10:413-417
Geitz, R.D. et al., (1995), "Studies on the Transformation of Intact Yeast Cells by the LiAc/SS-DNA/PEG Procedure" Yeast 11:355-360
Hare, B.J. et al., (June 1999), "Structure, specificity and CDR mobility of a class II restricted single-chain T-cell receptor" Nat. Struct. Biol. 6:574-581
Hilyard, K.L. et al., (Sept 1994), "Binding of soluble natural ligands to a soluble human T-cell receptor fragment produced in Escherichia coli," Pro. Natl. Acad. Sci. USA 91:9057-9061
Holler, P.D. et al., (May 2000), "In vitro evolution of a T cell receptor with high affinity for peptide/MHC,"PNAS 97(10):5387-5392
Huse, W. D. et al., (Dec 1989), "Generation of a Large Combinatorial Library of the Immunoglobulin Repertoire in Phage Lambda," Science 246:1275-1281
Jorgensen, J.L. et al., (Jan 1992), "Mapping T-cell receptor-peptide contacts by variant peptide immunization of single-chain transgenics," <i>Nature</i> 355:224-230
Kappler, J. et al., (Aug 1994), "Binding of a soluble aß T-cell receptor to superantigen/major histocompatibility complex ligands," Proc. Natl. Acad. Sci. USA 91:8462-8466

Form PTO-1449		
ATTY DOCKET NO. 89-99A	SERIAL NO. 10/783,786	FILING DATE February 20, 2004
APPLICANT Kranz et al.		GROUP 1645

Kieke, M.C. et al., (May 1999), "Selection of functional T cell receptor mutants from a yeast surface-display library," Proc. Natl. Acad. Sci. USA 96(10):5651-5656
Kipriyanov, S. M. et al., (Apr 1997), "Two amino acid mutations in an anti-human CD3 single chain Fv antibody fragment that affect the yield on bacterial secretion but not the affinity," Protein Eng. 10(4):445-453
Kowalski, J. M. et al., (Feb 1998), "Secretion efficiency in Saccharomyces cerevisiae of bovine pancreatic trypsin inhibitor mutants lacking disulfide bonds is correlated with thermodynamic stability," Biochemistry 37(5):1264-1273
Kowalski, J.M. et al., (July 1998), "Protein folding stability can determine the efficiency of escape from endoplasmic reticulum quality control," J. Biol. Chem. 273(31):19453-19458
Letourneur, F. and Malissen, B., (1989), "Derivation of a T cell hybridoma variant deprived of functional T cell receptor a and b chain transcripts reveals a nonfunctional a-mRNA of BW5147 origin" Eur. J. Immunol. 19(12):2269-2274
Manning, T. C. et al., (Apr 1998), "Alanine Scanning Mutagenesis of an αβ T cell Receptor: Mapping the Energy of Antigen Recognition," <i>Immunity</i> 8:413-425
Manning et al., (Feb.1999), "Effects of complementarity determining region mutations on the affinity of alpha/beta T cell receptor: measuring the energy associated with CD4/CD8 repertoire skewing," J. Exp. Med. 189(3):461-470
Marks, J.D. et al., (Aug 1992), "Molecular Evolution of Proteins on Filamentous Phage," J. Biol. Chem. 267(23):16007-16010
Marks, J.D. et al., (1991), "By-passing Immunization. Human Antibodies from V-gene Libraries Displayed on Phage," J. Mol. Biol. 222:581-597
Martineau, P. et al., (July 1998), "Expression of an antibody fragment at high levels in the bacterial cytoplasm," J. Mol. Biol. 280(1):117-127
McCafferty, J. et al., (Dec 1990), "Phage antibodies: filamentous phage displaying antibody variable domains," Nature 348:552-554
Novotny, J. et al., (Oct 1991), "A soluble, single-chain T-cell receptor fragment endowed with antigen-combining properties," Proc. Natl. Acad. Sci. USA 88:8646-8650
Nieba, L. et al., (April 1997), "Disrupting the hydrophobic patches at the antibody variable/constant domain interface: improved in vivo folding and physical characterization of an engineered scFv fragment." Protein Eng. 10(4):435-444

Form PTO-1449		
ATTY DOCKET NO. 89-99A	SERIAL NO. 10/783,786	FILING DATE February 20, 2004
APPLICANT Kranz et al.		GROUP 1645

O'Herrin, S.M. et al., (Oct 1997), "Analysis of the Expression of Peptide-Major Histocompatibility Complexes Using High Affinity Soluble Divalent T Cell Receptors," J. Exp. Med 186:1333-1345
Olsnes, S. and Pihl, A., "Chimeric Toxins" (1982), Pharmac. Ther. 25:355-381
Rabinowitz et al., (Feb. 1996), "Kinetic discrimination in T-cell activation" Proc. Natl. Acad. Sci. USA 93:1401-1405
Sant'Angelo, D.B. et al., (April 1996), "The Specificity and Orientation of a TCR to its Peptide-MHC Class II Ligands," Immunity 4:367-376
Schlueter, C.J. et al., (1996), "A Residue in the Center of Peptide QL9 Affects Binding to Both L ^d and the T Cell Receptor ¹ ," J. Immunol. 157:4478-4485
Schneck, J. et al., (Jan 1989), "Inhibition of an Allospecific T Cell Hybridoma by Soluble Class I Proteins and Peptides: Estimation of the Affinity of a T Cell Receptor for MHC," Cell 56:47-55
Schodin, B.A. and Kranz, D.M., (Dec. 1993), "Binding Affinity and Inhibitory Properties of a Single-Chain Anti-T Cell Receptor Antibody," J. Biol. Chem. 268(34):25722-25727
Schodin, B.A. et al., (1996) "Binding Properties and solubility of single-chain T cell receptors expressed in E. Coli" Mol. Immun.33(9):819-829
Seibel, J.L. et al., (June 1997), "Influence of the NH ₂ -terminal Amino Acid of the T Cell Receptor α Chain on Major Histocompatibility Complex (MHC) Class II ÷ Peptide Recognition," J. Exp. Med. 185(11):1919-1927
Seth, A. et al., (May 1994), "Binary and ternary complexes between T-cell receptor, class II MHC and superantigen in vitro," Nature 369:324-327
Sheets, M.D. et al., (May 1998), "Efficient construction of a large nonimmune phage antibody library: The production of high-affinity human single-chain antibodies to protein antigens," Cell Biology 95(11):6157-6162
Shusta, E.V. et al., (April 1999), "Biosynthetic polypeptide libraries," Curr. Opin. Biotechnol. 10:117-122
Shusta, E.V. et al., (Oct. 1999), "Yeast Polypeptide Fusion Surface Display Levels Predict Thermal Stability and Soluble Secretion Efficiency," J. Mol. Biol. 292:949-956
Slanetz, A.E. and Bothwell, A.L., (1991), "Heterodimeric, disulfide-linked a / b T cell receptors in solution" Eur. J. Immunol. 21:179-183

Form PTO-1449		
ATTY DOCKET NO. 89-99A	SERIAL NO. 10/783,786	FILING DATE February 20, 2004
APPLICANT Kranz et al.		GROUP 1645

	Soo Hoo, W.F. et al., (May 1992), "Characterization of a single-chain T-cell receptor expressed in <i>Escherichia coli</i> ," Proc. Natl. Acad. Sci. <i>USA</i> 89:4759-4763
·	Speir, J.A. et al., (May 1998), "Structural Basis of 2C TCR Allorecognition of H-2L ^d Peptide Complexes," Immunity 8:553-562
	Sykuley, Y. et al., "Kinetics and Affinity of Reactions between an Antigen- Specific T Cell Receptor and Peptide-MHC Complexes" (1994), Immunity 1:15- 22
	Sykulev, Y. et al., (Nov 1994), "High-affinity reactions between antigen-specific T-cell receptors and peptides associated with allogeneic and syngeneic major histocompatibility complex class I proteins," Proc. Natl. Acad. Sci. USA 91:11487-11491
	Sykulev, Y. et al., (Dec. 1995) "The Law of mass action governs antigenstimulated cytolytic activity of CD8+ cytotoxic T lymphocytes" Proc. Natl. Acad. Sci. USA 92:11990-11992
	Tjoa, B.and Kranz, D.M., (July 1992) "Diversity of T cell receptor-alpha chain transcripts from hyperimmune alloreactive T cells." J Immunol (United States) 149(1) 253-259
·	Udaka, K. et al., (1993), "A ubiquitous protein is the source of naturally occurring peptides that are recognized by a CD8+ T-cell clone" Proc. Natl. Acad. Sci. USA 90:11272-11276
	Valitutti, S.et al., "Serial triggering of many T-cell receptors by a few peptide-MHC complexes" (May 1995), Nature 375:148-151
	Ward, E.S., (1991), "Expression and Secretion of T-Cell Receptor V α and V β Domains using Escherichia coli as a Host," Scand. J. Immunol. 34:215-220
	Ward, E.S., (1992), "Secretion of T Cell Receptor Fragments From Recombinant Escherichia coli Cells," J. Mol. Biol. 224:885-890
	Wedemayer, G.J.et al., "Structural Insights into the Evolution of an Antibody Combining Site" (June 1997), Science 276:1665-1669
	Weidanz, J.A. et al., (Dec. 1998), "Display of functional αβ single-chain T-cell receptor molecules on the surface of bacteriophage," J. Immunol. Meth. 221:59-76
	Willcox, B.E. et al., "TCR Binding to Peptide-MHC Stabilizes a Flexible Recognition Interface" (March 1999), Immunity 10:357-365

Form PTO-1449		
ATTY DOCKET NO. 89-99A	SERIAL NO. 10/783,786	FILING DATE February 20, 2004
APPLICANT Kranz et al.		GROUP 1645

Winter, G. et al., "Making Antibodies By Phage Display Technology" (1994) Annu. Rev. Immunol. 12:433-455
Wittrup, D.K., "Phage on Display" (Nov. 1999), Trends in Biotech. 17(11):423-424
Wolfe, M.S. et al., (Jan. 1998), A Substrate-Based Difluoro Ketone Selectively Inhibits Alzheimer's y-Secretase Activity," J. Med. Chem. 41:6-9

EXAMINER

DATE CONSIDERED

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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